

REMARKS

Rejections under 35 U.S.C. sec. 102(b):

Claims 1 – 7

Claims 1 – 7 are cancelled.

Claim 9

The Examiner rejected Claim 9 under 35 U.S.C. 102(b), "Owen discloses (refer to figure 2) a dual optical system comprising: a first optical system comprising a first set of lenses (lens 50 and lens 46) wherein a portion of the first set of lenses comprises cut-out sub-aperture (30') and a second optical subsystem comprising a second set of lenses (lenses 44) wherein a portion of the second set of lenses are positioned within the sub-apertures (30') of the first set of lenses (column 4, lines 11-67, column 5, lines 1 – 13).

As amended, Claim 9 now sets forth, "the second optical subsystem transmits a second band of optical wavelengths NOT transmitted by the first optical sub-system. . . . "

The amendment clarifies the distinction of Claim 9 from the teaching of Owen, Owen teaching that lenses 14 (figures 1 – 4) and 214 (figures 5-6) are required to transmit all wavelengths of light used by the optical system. Light of all optical wavelengths must follow path 34 through the outer portion of lens 14 or 214 before splitting into paths 34i and 34v. Therefore, Owens teaches that the material of lenses 14 or 214 must transmit both visible and "invisible" light, which embodiments of the present invention improve upon, by eliminating this restriction. Thus, Claim 9, as amended, is clearly distinguished from Owen.

For at least these reasons, Applicants request the allowance of Claim 9 (as amended).

Claim 10

The Examiner rejected Claim 10 under 35 U.S.C. 102(b), "Owen discloses, wherein the first optical subsystem transmits at least a first band of optical wavelength (34i) the second optical subsystem transmits at least a second band of optical wavelengths (34v) (column 4, lines 40-41, lines 64)."

As amended, Claim 10 recites, “The dual optical system of Claim 9, wherein the first optical subsystem and the second optical subsystem are refractive [lenses-only].”

Owen discloses only catadioptic systems (having both lenses and mirrors), rather than refractive systems of lenses, as claimed by Applicants. Therefore, as amended, Claim 10 is distinguished from Owen’s teaching.

For at least these reasons, Applicants request the allowance of Claim 10 (as amended).

Claims 11 – 13

Claims 11 – 13 are allowable as depending from allowable Claims 9 and 10.

Claims 14 - 17

The Examiner rejected Claim 14, “Owen discloses, wherein the first optical subsystem (lenses 50 and 46) comprises a first subsystem focus group, the second optical subsystem comprises a second subsystem focus group (lens 44) and wherein the dual optical system further comprises a first focus mechanism, attached to and capable of moving the first and second sub-system focus groups (column 4, lines 25-56).

Claim 14 sets forth, “wherein the first optical subsystem comprises a first subsystem focus group, the second optical subsystem comprises a second subsystem focus group, and wherein the dual optical system further comprises a first focus mechanism, attached to and capable of moving the first and second sub-system focus groups.

Paragraph [0035] of the present application may be used to help interpret Claim 14. It discloses:

“Lens elements 310 and 330 form focusing element 346. Focusing mechanism 348, which can be any of a number of electronic or mechanical devices (e.g., motor, cam, screw), moves element 346 along path 350 to adjust the focus of both images 322 and 344 at the same time. Because one motion focuses light along both paths 320 and 342 at the same time and by the same amount, changes in

object distance can be corrected for both optical subsystems 317 and 337."

Upon studying the '266 patent to Owen, Applicants do not find a reference to a focus mechanism, particularly in column 4, lines 25-56 (as cited). A focus mechanism does not appear in any of the Figures (1-6). Also (referring to figure 2 of Owen), it is not apparent that any single motion of element(s) will result in good adjustment of focus of both optical subsystems. For example, there is no indication that a "mechanism" is "attached to" or "capable of moving" lenses 50 and/or 46 and lens 44. While motion of the eyepiece would focus visible light and light from the image intensifier, motion of the eyepiece would do nothing to better focus the invisible light image on the image intensifier (so the image would remain blurry). Applicants respectfully request clarification of this aspect of the rejection (or allowance).

As Owen does not disclose a "focus mechanism, attached to and capable of moving the first and second sub-system focus groups" to focus both subsystems Applicants request allowance of Claim 14.

Claim 15 is allowable as depending from Claim 14.

Claim 16 is allowable for the same reasons as claim 14.

Claim 17 is allowable as depending from Claim 16

Claims 14-17 are also allowable as depending from allowable Claims 9 and 10.

Applicants therefore request allowance of Claims 14 – 17.

Claim 18

The Examiner rejected Claim 18, "Owen discloses, a focus element comprising: a first lens element (50) capable of refracting light of a first band of optical wavelengths and having an aperture cut through it and a second lens (44) capable of refracting light of a second band of optical wavelengths fixed in the aperture (30') of the first lens and focus mechanism attached to the focus element capable of moving the focus element (column 4, lines 25-56).

Claim 18 sets forth:

"The dual optical system of Claim 9, further comprising:
a focus element, the focus element comprising:

a first lens, capable of refracting light of a first band of optical wavelengths, and having an aperture cut through it; and

a second lens, capable of refracting light of a second band of optical wavelengths, fixed in the aperture of the first lens; and

a focus mechanism, attached to the focus element, capable of moving the focus element."

Applicants respectfully ask the Examiner to reconsider Claim 18 in light of Applicants' arguments regarding the focus mechanism of Claim 14.

Applicants further point out that first lens element (50) as taught by Owen is in the visible light channel (path 34v). Second lens (44) as taught by Owen is after intensifier tube (38). As intensifier tube (38) produces visible light, to be seen by the user's eye, lens (44) must also be designed for transmission of visible light, e.g., the same (first) visible band as first lens element (50) and not the (second) invisible band. Therefore, Owen does NOT teach, "a second lens, capable of refracting light of a second band of optical wavelengths," as set forth in Claim 18.

For at least these reasons, Applicants request that Claim 18 be allowed.

Claims 19, 28 and 20-24

The Examiner rejected Claim 19 (and similarly Claim 28), "Owen discloses, wherein the first optical subsystem (lenses 50 and 46) is capable of producing a first image formed of light from the first optical wavelength band and the second optical sub-system (lenses 44) is capable of producing a second image from the light of the second optical wavelength band, and where motion of the focus element adjusts the focus of both the first image and the second image (column 4, lines 25-56).

As previously discussed regarding Claims 14 and 18, Claims 19 and 28 set forth, "wherein motion of the focus element adjusts the focus of BOTH the first image and the second image," which is not taught by Owen.

As discussed regarding Claim 18, lens 44 refracts visible light, produced by intensifier tube 38, and therefore is not "capable of producing a second image from the light of the SECOND optical wavelength band" (infrared). It may produce an image with the light from the intensifier output, but that is visible light, not "invisible" (infrared).

Therefore for at least these reasons, Applicants request that the Examiner allow Claims 19 and 28. As Claims 20-24 depend from Claim 19, they are also allowable for at least the same reasons.

Claims 29 and 30

The examiner rejected Claim 29, "Owen discloses a dual band lens having a visible optical path (34v) and an infrared optical path (34i) comprising: a dual band focus group comprising an annular first infrared lens element having an inner radius and a circular first visible lens element located with the inner radius of the annular infrared lens element and a fixed infrared imaging group, comprising a plurality of fixed infrared lens elements (44) and a fixed imaging group comprising a plurality of fixed visible elements (lenses 50 and 46), wherein the dual band focus group and the fixed infrared imaging group are placed along the infrared optical path and wherein the dual and focus group and the fixed visible imaging group are placed along the visible optical path (column 4, lines 25-56).

Claim 29 sets forth:

A dual band lens, having a visible optical path and an infrared optical path, comprising:
 a dual-band focus group, comprising
 an annular first infrared lens element having an inner radius, and
 a circular first visible lens element, located within the inner radius of the annular infrared lens element;
 a fixed infrared imaging group, comprising a plurality of fixed infrared lens elements; and
 a fixed visible imaging group, comprising a plurality of fixed visible lens elements;
 wherein, the dual band focus group and the fixed infrared imaging group are placed along the infrared optical path, and wherein the dual and focus group and the fixed

visible imaging group are placed along the visible optical path.

As used in this embodiment, Applicants define “dual-band focus group,” to be a non-fixed (movable) group. As discussed regarding Claims 14, 18, 19, and 28, the dual-band focus group is capable of focusing both infrared and visible channels when moved by a single mechanism. Owens does not teach motion of a single dual-band-group to adjust focus in both bands (visible and invisible/infrared).

Applicants also note that lens (44) is a visible lens (being after the intensifier), and not an infrared lens.

Applicants believe Claim 29 is allowable in light of the preceding arguments; however, Applicants would consider amend Claim 29 to, “a dual band focus group, capable of adjusting focus in both the infrared and visible paths, simultaneously...,” if suggested by the Examiner to avoid a final rejection.

Claim 30 is allowable as depending from Claim 29.

Applicants therefore request allowance of Claims 29 and 30.

Rejections under 35 U.S.C. sec. 102(b):

Claim 8

Claim 8 is cancelled.

Claims 26 and 27

Claims 26 and 27 are cancelled.

Allowable Subject Matter

Applicants thank the Examiner and have amended Claims 25 and 31 as independent claims per the Examiner’s suggestion. A fee transmittal is included to add two additional independent claims.

Fee Transmittal

A Fee Transmittal and Credit Card form are included to provide for the addition of two independent claims at \$86 each, totaling \$172, and three independent claims, at \$18 each, totaling \$54. The total fee transmitted is \$226.

As noted on the Transmittal and Credit Card form, Applicants authorize the Commissioner to adjust the fee amount to reflect any change in fee calculation.

Change of correspondence information:

Please note that Attorney for Applicants has submitted a change of contact:

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to agree with the attorney's recently-updated Registration information.

Please direct any immediate questions or comments to Attorney for Applicants, Mark A. Lundgren, at the above address or by phone.

Sincerely,

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APPENDIX A – CLAIMS AS AMENDED

Per 35 U.S.C. sec 121, Applicants include the following marked-up versions of the amended claims.

9. (Amended) A dual optical system, comprising:

a first optical subsystem, comprising a first [set] plurality of lenses, wherein, a portion of the first [set] plurality of lenses comprise cut-out sub-apertures and remaining apertures; and

a second optical subsystem, comprising a second [set] plurality of lenses; wherein, a portion of the second set of lenses are positioned within the cut-out sub-apertures of the first set of lenses,

wherein, the first optical subsystem transmits a first band of optical wavelengths through the remaining apertures, and the second optical subsystem transmits a second band of optical wavelengths not transmitted by the first optical subsystem.

10. (Amended) The dual optical system of Claim 9, wherein the first optical subsystem and the second optical subsystem are refractive.

24.(Amended) The dual optical system of [any of c] Claim 23, wherein the first band of optical wavelengths is an infrared band, and the second band of optical wavelengths is a visible band.

25. (Amended) A dual optical system, comprising:

a first optical subsystem, comprising a first set of lenses, wherein, a portion of the first set of lenses comprise cut-out sub-apertures; and

a second optical subsystem, comprising a second set of lenses; wherein, a portion of the second set of lenses are positioned within the

sub-apertures of the first set of lenses [The dual optical system of claim 9],
wherein

the first optical subsystem further comprises a first variator group and a first compensator group, and

wherein the second optical subsystem further comprises a second variator group in contact with the first variator group and a second compensator group in contact with the first compensator group, and

wherein the dual optical system further comprises a zoom mechanism, capable of moving the first and second variator groups and the first and second compensator groups.

31. (Amended) A dual band lens, having a visible optical path and an infrared optical path, comprising:

a dual-band focus group, comprising

an annular first infrared lens element having an inner radius, and

a circular first visible lens element, located within the inner radius of the annular infrared lens element;

a fixed infrared imaging group, comprising a plurality of fixed infrared lens elements; and

a fixed visible imaging group, comprising a plurality of fixed visible lens elements;

wherein, the dual band focus group and the fixed infrared imaging group are placed along the infrared optical path, and wherein the dual and focus group and the fixed visible imaging group are placed along the visible optical path,

wherein a portion of the plurality of fixed infrared lens elements comprise cut-out sub-apertures, and wherein a portion of the visible optical path passes through the cut out sub-apertures.

[The dual band lens of Claim 30,] further comprising:

a dual-band variator group, comprising an infrared variator element positioned along the infrared optical path and a visible variator element positioned along the visible optical path, in contact with the infrared variator element;

a dual-band compensator group, comprising an infrared compensator element positioned along the infrared optical path and a visible compensator element positioned along the visible optical path, in contact with the infrared compensator element; and

a zoom mechanism, in contact with the dual band variator group and the dual band compensator group, capable of zooming the dual band lens.